

INVENTIONS AND BOOKS--  
WHAT OF THE FUTURE?

Fair, Ethel M.

F  
H V 1733

H V 1733  
F 35  
1936



**M.C. MIGEL LIBRARY  
AMERICAN PRINTING  
HOUSE FOR THE BLIND**



# THE LIBRARY JOURNAL

Jan. 15, 1936. Vol. 61, No. 2

Hv1733

F

copy one



## Inventions And Books—What Of The Future?

ETHEL M. FAIR

Director, Library School, New Jersey College For Women, New Brunswick

FOR SIX THOUSAND and more years man's inventive genius has been devising ways and means of making permanent the records of his thoughts and deeds.

For six decades and more American librarians have contrived ways and means of circulating these records as a service to readers. Practical devices and inventions contributed to greater facility with increased use of public libraries. Iron and steel shelving, improved lighting, "indicators," book lifts and "wing" desks contributed to the improved physical arrangements. Systems of records were devised to expedite the circulation and recall of books. But here a sad story faces us: the librarians, worshipping the results of the painstaking efforts and their manuscript records, resented and resisted the introduction of additional mechanical inventions. Typewriters, telephones, automatic counters, mimeographs, electrical charging machines, automatic numbering machines, adding machines have been tardily introduced into the operation of libraries. Other organizations have taken advantage of photostatic processes, card sorting machines, dictaphones, elaborated filing equipment and visible indexes, while libraries use these services only to a limited extent.

### MAN'S INVENTIVENESS

In some libraries occupying up-to-date buildings evidence of man's inventiveness will be found in sound-proof floorings; electric elevators and book conveyors; centrally and locally controlled lighting; house and outside telephone connections; book storage space of steel

and concrete; air conditioning, including heating and refrigeration; apparatus for vacuum cleaning, adding machines, mechanical statistical recording devices, cash registers, multigraphing and planigraphing machines and occasionally the teletype. In modern building construction more use could be made of noise-absorbing walls and ceilings, or such preparations could easily be applied to rooms already constructed. These devices make a highly mechanized institution in comparison with the *scriptoria* of the middle ages.

There are two obvious reasons why the mechanical inventions and physical equipment often freely used in other public buildings and offices are not readily introduced into public libraries: the meager funds allowed to libraries for building up the service; and the slowness to change inherent in any idea which has become crystallized into an institution.

There has also been an absence of scientific experimentation in libraries or of study of the distribution problem. Inasmuch as libraries themselves have not maintained experimental laboratories it is difficult to find the usable product or device; and the library supply houses in spite of their expansion and the multiplicity of devices now offered in contrast to the items such as rubber bands offered in the early catalogs not so many years ago, have not succeeded in going very far in the adaptation of modern industrial and commercial mechanization to the needs of libraries. But leaving aside the question of lag in experimentation and lack of funds, it is interesting to consider what changes might



be introduced into the public library by taking advantage of inventions contributing to the smooth working of the library of the future.

#### RECOMMENDED INNOVATIONS

First, the problem of access to the building. Retail stores have long ago realized the advantage of removing obstacles at the entrance to buildings. Street level floors and gentle ramps have replaced steps; ample doorways and entry ways have replaced the narrow single doors and congested approaches; swinging or revolving doors easily operated by the "customer" laden with packages, to say nothing of the "electric eye" which



By Courtesy Western Electric Co.

*The Teletype Machine*

now opens the door for the traveler, have replaced the cumbersome latched wooden or bronze doors which are still so generally used at the entrance to public libraries. The door which becomes a thoroughfare instead of an obstacle belongs at the entrance to a storehouse of books as it does at the entrance to an office building, a bank, or the Museum of Modern Art where even on a rainy day the door stands hospitably open.

Within the library more checking facilities, or at least automatically checked umbrella and coat racks, is an innovation strongly recommended. More elevator or escalator service in the larger libraries is reasonable.

Glass has made the interior scene of the department store inviting instead of shutting it out as solid doors did. Glass also facilitates the movement of traffic, preventing interference and collisions. Canvas coverings such as stores use over the sidewalk might even be recommended to libraries to protect the borrower alighting from an automobile or stopping to lower an umbrella<sup>1</sup> in the rain, especially as librarians are accustomed to object to damp books!

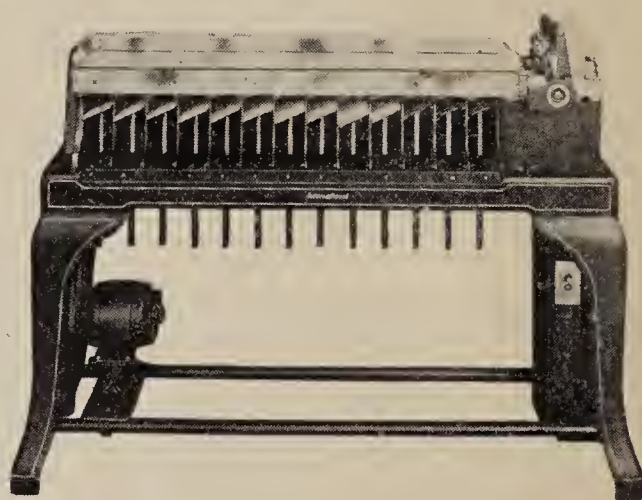
The photo-electric cell (the "electric eye") might, without stretching the imagination, be used to record books as they are borrowed or returned, matching symbol with symbol, just as it now rejects improperly labelled cans as they pass in review. Or equally acceptable would be an extension of the electric sorting ma-

<sup>1</sup> Probably the "umbrella" obsession apparent in this paper would apply only in certain areas!

chines by which a properly punched card such as a "Hollerith" card<sup>2</sup> might convey all the necessary records to the final human or mechanical recorder.

#### ELECTRIC SORTING MACHINES

Electric sorting machines are already developed to care for analyzing any data which can be reduced to codes and cards. The method is being used by one or two institutions in analysis of readers and reading and in analysis of book purchases.<sup>3</sup> Inasmuch as it is not necessary or desirable to set up such machines in an individual library, but, rather, it is best to send the records to a statistical bureau using the machines (for which a very reasonable charge is made) there seems to be no good reason why library records of readers, reading, distribution of stock, and finances could not



By Courtesy International Business Machines, Inc.

*The Electric Card Sorting Machine*

be more quickly, completely and satisfactorily determined, analyzed and recorded, than by the present human eye, hand and fingers method where the head is often lacking.

Mechanization of equipment offers itself to make card records more easily scanned by the use of visible indexes. The public has never lost its love for a printed catalog over which the eye may run, and it has never fully accommodated itself to the inconvenience of having to manipulate a card before the eye can read the next title. It is strange that the convenience of quick reference offered by the visible index<sup>4</sup> has not been more widely adopted by libraries in spite of the recognized difficulties of bulk of equipment and of cost of installation.

#### TELEPHONE AND TELETYPE

Thanks to the code devices worked out by telephone companies, and to the excellent public psychology behind the companies' educational schemes encouraging the satisfying use of the telephone, the public at large

<sup>2</sup> Now part of the International Business Machines Corp. service, 270 Broadway, New York, N. Y.

<sup>3</sup> "Purchase Analysis Procedure—Boston Public Library", International Business Machines Corp. (1934. 5p. Multigraphed).

<sup>4</sup> Cf. "Kardex", Remington Rand, Inc., 205 East 42 St., New York, N. Y.



is learning the use of dial codes. Might it not be possible at some time to dial the code number of a book and have the signal automatically flashed to the stack where that book is shelved, saving the delay of intermediate agents and records? The desired volume or a report on its availability (like a "busy signal") would then be returned by pneumatic tube or by electricity to the inquirer waiting at a recorded location.

If limited staffs must leave some borrowers inadequately served, might it not in the future be possible to transmit messages by automatic recorders such as the teletype so that a request from the borrower or a message from the library could be left without the necessity of person to person communication?

#### LIGHTING

Lighting which for so many centuries curtailed the use of library buildings, has been more rapidly introduced—first the gas and later the electricity—with considerable concern for reading comfort.<sup>5</sup> But such advances in flood lighting and in display lighting or the perfect illumination of corners remote from windows which commercial organizations have long used, the libraries have failed to carry over.



By Courtesy West-  
on Electrical In-  
strument Corp.

*The Sight  
Meter*

Lighting within the building could be better controlled by the use of the photo-electric cell which is capable of maintaining illumination at any desired brilliancy regardless of the changing light from out of doors. Even the "Sight Meter"<sup>6</sup> which has been put on the market for general use would help to put the library

abreast of the interest in sight saving for a world which is required to rely more and more on artificial lighting.

For display lighting an excellent diffused light is afforded by a new device, the "Lumiline" lamp.<sup>7</sup> This unit resembles the neon tube but can be installed in small or multiple movable units. The lamps should be concealed by reflectors or frame of display space so that an indirect lighting effect is obtained.

#### HOME BOOK DELIVERY

Home book delivery has never been widely undertaken by libraries as a regular part of the service except in libraries serving sparsely settled areas or groups remote from an agency. We do not even tie together a pile of books carried by the borrower from the library or provide protection from the weather, but require the



By Courtesy General Electric Co.

*A Waitress Passing Through A Door Which Has Been Opened  
By The "Electric Eye" Or Photoelectric Cell*

borrower to be troubled to keep an armful of slippery bindings or of odd-sized volumes from slipping out of his hands as he boards a crowded bus or fights his way into a subway train; or, as one librarian truthfully expressed it, from sliding around with the groceries on the floor of the car. Just here Montclair's (N. J.) happy arrangement should be reported. By this arrangement a Western Union messenger daily delivers to the reader's home the books which have been requested. Parcel post service to and from readers could be more extensively used especially since the inauguration of the book post rate in 1928.



By Courtesy Western  
Union

To save the necessity of transporting rare books from place to place, or titles of which copies are scarce, the film roll has lent itself to the reproduction of page after page in miniature which can be projected upon the reader's screen.<sup>8</sup> This development necessitates the construction of proper storage space in the libraries.

#### TALKING BOOKS

If talking books should prove a practical and desirable means of preserving and transmitting human records not only for the blind but for any reader preferring to listen rather than to read, and

<sup>5</sup> "Eyes in the Library"; "Library Lighting—a Scientific Problem"; and "Some Aspects of Library Lighting from the Viewpoint of an Illuminating Engineer", LIB. JOUR. 59:237-248 (March 15, 1934).

<sup>6</sup> Sight Meter to "turn 'wrong' lighting into 'right' lighting", Commonwealth Edison Electric Shops, Chicago, Ill. Chicago *Daily News* (October 15, 1934); LIB. JOUR. 59:238 (March 15, 1934).

<sup>7</sup> A Westinghouse product. See also "Lumiline Lightstrip", LIB. JOUR. 60:570 (July, 1935).

<sup>8</sup> "Newspapers on Films", illus. LIB. JOUR. 59:471 (June 1, 1934). The Recordak System, Eastman Kodak Co.



SALES ANALYSIS CARD									
ITEM		QUANTITY		SALES		RETURNS		TOTAL	
NUMBER	DESCRIPTION	QUANTITY	SALES AMOUNT	QUANTITY	SALES AMOUNT	QUANTITY	SALES AMOUNT	QUANTITY	SALES AMOUNT
000000		0000	000000	0000	000000	0000	000000	0000	000000
000001		0000	000000	0000	000000	0000	000000	0000	000000
000002		0000	000000	0000	000000	0000	000000	0000	000000
000003		0000	000000	0000	000000	0000	000000	0000	000000
000004		0000	000000	0000	000000	0000	000000	0000	000000
000005		0000	000000	0000	000000	0000	000000	0000	000000
000006		0000	000000	0000	000000	0000	000000	0000	000000
000007		0000	000000	0000	000000	0000	000000	0000	000000
000008		0000	000000	0000	000000	0000	000000	0000	000000
000009		0000	000000	0000	000000	0000	000000	0000	000000
000010		0000	000000	0000	000000	0000	000000	0000	000000

By Courtesy International Business Machines Corp.

"Hollerith" Or Tabulating Card Referred To On Page 48

so supersede the printed page<sup>9</sup> for popular consumption, libraries would have to provide auditoriums, amplifying rooms or auditor's booths where patrons could enjoy a book. The necessary electric equipment and apparatus would also, of course, have to be provided.

If records continue to multiply by cheaper and cheaper methods with lightning-like rapidity on less durable materials,<sup>10</sup> what will be the character of preserved collections of records of the future? The trend indicated toward news headlines, digests, summaries, outlines, ephemeral publications, may develop into a sifting of records into perhaps three classes: First, full documented data on events considered of sufficient importance for preservation on permanent materials; second, abstracts or summaries of published records preserved in a durable medium; and third, a current flood of contemporary world news and of creative literature on material of suitable quality to assure its preservation until it "gets cold."

Out of this last group would be selected what seems significant after the fresh product has had time to "get cold," from which desired summaries, outlines, abstracts, bibliographies or indexes, or complete copies could be made to be recorded on a durable material for preservation in limited number of copies for use in subsequent years. The limited output would be provided because by the devices for reproduction established in the future it will be possible to make cheap copies of records or to flash the face of the printed page or the sound of the words<sup>11</sup> out of the past to any reader for his use wherever he may be.

<sup>9</sup> "It is by no means certain that the printed book will remain as the chief medium of the transmission of knowledge. The development of gramophones, broadcasting, and television or a combination of any two or all three of them, may eventually abolish the book except as a curiosity and a subject of antiquarian research" (Footnote to "The Aims of Bibliography" by Stephen Gaselee) *The Library*, 13:245 (4th ser. 1932-33). See also "Talking Books for the Blind", *ILLUS. LIB. JOUR.* 59:315 (April 1, 1934).

<sup>10</sup> To assure the preservation of certain texts for future generations three leading newspapers are publishing an edition on rag paper (which costs, for the *New York Times*, \$170 for a year's subscription). And then to counteract the disadvantage of bulk in storage of the volumes, an experiment is being tried in reducing the sheet to 1/4 size with correspondingly reduced type size. The headlines are legible by the naked eye and the articles can be read with the help of lenses. Some books are also being published in special editions on rag paper. These are immediate efforts to solve the problem of survival and of storage of records for the future.

<sup>11</sup> "The elusive Harvard accent, long a subject of speculation, is to be reduced to a scientific basis and preserved on phonographic records for posterity", *Chicago Tribune* (November 9, 1934).

The cheapness and perishability of these imagined contemporary records of the future may be one of the saving factors of the public libraries in that current material may be obtained at low cost; and that the quantity of material which remains to be permanently housed will be reduced to manageable proportions.

#### CENTRAL COLLECTIONS

Furthermore, the development of regional service<sup>12</sup> which is likely to expand in the future will enable areas to provide Central Collections where the complete permanent collections may be consulted, or from which cheap copies may be reproduced and supplied to readers. Deputy libraries would have smaller portions of the more frequently wanted permanent records to serve smaller sections of the areas, calling on the Central Collection for other material occasionally needed by the



By Courtesy Remington Rand Inc.

*It Is Strange That  
The Convenience  
Of Quick Refer-  
ence Offered By  
The Kardex Has  
Not Been More  
Widely Adopted  
By Libraries*

reader. The smaller agencies, in turn, dotted throughout the area wherever the people are would distribute principally the current literature, the news of the day and the popular material which rises for a few months to the crest of the wave of demand.

Such a sifting of records will go far to remove from future libraries the condition described by Dr. Carl Van Doren as "libraries of unopened volumes like heaps of slag,"<sup>13</sup> and will enable libraries to be sensitive and adequate clearing houses of the facts, thoughts and ideas of human history at the service of the inquiring reader.

These adjustments in the manufacture of the records

<sup>12</sup> For an outline of regional organization see Great Britain, Board of Education, Public Libraries Committee, *Report on Public Libraries in England and Wales*. . . 1927, H. M. Stationery office (1927. 356p.).

<sup>13</sup> Van Doren, Carl, "Literature", in Charles Beard's *Whither Mankind*, p. 401 (Longmans, 1928).



and the mechanical organization of book collections are the pieces of the jigsaw puzzle of the future.

In the adoption of any or all of these ideas suggested for the libraries of the future, the objection of "cost" will be raised. To be sure, changes, innovations, improvements, enlargements will cost money and plenty of it! The writer has never heard any suggestion to the contrary. But if this factor had been regarded through the past history of libraries, we would still be doing without heat in the buildings, would be using the collections of books only in the daytime, and would limit the use to the favored few who could be served by a single faithful "keeper" of books in each institution.

#### DISSATISFACTION EXISTING AMONG PATRONS

Changes are frequently forced by dissatisfaction with existing conditions or organizations. Among the dissatisfactions existing among patrons of public libraries today are: the physical effort required to reach a library

and to get a book; the limited services available from it by telephone; the disappointments in failing to find the desired book or information in the library; the difficulty in knowing what book or books will satisfy the

immediate need; and the long delay in securing the wanted title. If differentiation between clerical and book service could be established in a library; if further inventions and mechanization can increase the mobilization of books and can free librarians for more service to the reader; if increased mobilization and more direct book service between the staff and the reader

can be made to yield a type of reading and informational service that serves a desirable social set-up and that satisfies the recognized individual needs, then the invention, the particular mechanization, the improved mobilization of social records will be accomplished and funds will be forthcoming to pay for these improvements.

Hasten the day!



By Courtesy American Foundation For The Blind  
*The Talking Book*

#### SOME READING WHICH WILL STIMULATE THINKING ON THE LIBRARIES OF THE FUTURE

- Cheney, O. H., *Economic Survey of the Book Industry, 1930-1931* (New York: National Assn. of Book Publishers, 1931)
- Duffus, R. L., *Mastering a Metropolis: Planning for the Future of the New York Region* (New York: Harper, 1930)
- Illuminating Engineering Society, "The Artificial Lighting of Libraries", I. E. S. & the Library Association, 1931. (Reprinted from the *Illuminating Engineer*)
- Keppel, F. F., *The Arts in Social Life* (New York: McGraw, 1934. Recent Social Trends monograph)
- McKenzie, R. D., *The Metropolitan Community* (New York: McGraw, 1933. Recent Social Trends monograph)
- Martin, R. E., "Electric Eye Guides Ghostly Hands" *Popular Science* 123:20-1 (August, 1933)
- Mumford, Lewis, *Technics and Civilization* (New York: Harcourt, 1934)
- Sloan, A. P., Jr., "The Forward View" *The Atlantic Monthly* 154:257-64 (September, 1934)
- Stair, J. L., *The Lighting Book* (Chicago: Curtis Lighting, Inc.)
- Wiley, M. M. & Rice, S. A., *Communication Agencies and Social Life* (New York: McGraw, 1933. Recent Social Trends monograph)

# Bookstack Planning With The Cubook

ROBERT W. HENDERSON

In Charge Of Stack, The New York Public Library

IN PLANNING A LIBRARY, and particularly a bookstack, a librarian thinks in terms of books: an architect, on the other hand, thinks of floor areas and cubic feet of building. Is there some simple formula for translating books into square feet and cubic feet, so that the librarian and the architect can readily understand their respective needs?

One cannot measure quantities, nor calculate areas and cubic content without definite units of measurement. A "book" is such a vague and uncertain term that its use in a mathematical formula is impossible. This was demonstrated in an article in *THE LIBRARY JOURNAL* of November 15, 1934, where the cubook was suggested as a much needed unit for bookstack measurement.<sup>1</sup>

It was also pointed out that calculations were usually based on the assumption that all the shelves could be filled for their entire length, an impossible condition in practice, where relative location is used. Furthermore, ordinary calculations did not include a factor to compensate for the varied spacing of shelves resulting from the uneven heights of the books.

A study was then made to approximate the average size of books in a large reference collection. It so happened that almost exactly one hundred of these average books, plus 10 per cent to allow for end space, occupied one standard section 3' wide by 7'6" high, and this figure was adopted as the unit for bookstack measurement. It was named the CUBOOK. A cubook, then, is the volume of space required to shelve the average size book in a typical library. A standard section 3' wide by 7'6" high contains 100 cubooks.

But conditions in a large reference library, where there are large numbers of quartos and folios, are different from those in other types of libraries. One library may be all octavos, another may have a preponderance of quartos. The expression of size in cubooks is a mathematical measurement, and should always be used when reference is made to the structural size of the bookstack. In a large stack room, filled to practical capacity, the number of cubooks will approximate the actual number of volumes, but in order to enable a librarian to estimate the number of volumes when proportions of octavos, quartos and folios vary from the formula, the following table is given. It should be noted that multiplication by 1.11 adds 10 per cent, the factor allowed for empty space at the ends of the shelves.

Brief explanation of the table in the right hand column may be necessary:

TABLE A.

Formulae for Estimating Stack Capacity

	8°	4°	f°	8° + 4° only
Symbols for number of books in size-groups. . . . .	a	b	c	d
Books per section. . . . .	147	75	13	130
Books per running foot of shelf. . . . .	7	3.57	.61	6.21
Ratio of sizes of individual books. . . . .	1	1.96	11.3	1.12
Ratio of number of books in size-groups. . . . .	85	13	2	87:13

A = Number of volumes needed. X = Number of 3' sections.  
To estimate shelving when number of books is known:

1. For typical large reference library, when ratios of the cubook

are accepted:  $X = \frac{A}{100}$

2. For octavos only:  $X = \frac{a \times 1.11}{147}$

3. For quartos only:  $X = \frac{b \times 1.11}{75}$

4. For folios only:  $X = \frac{c \times 1.11}{13}$

5. For octavos and quartos only:  $X = \frac{d \times 1.11}{130}$

6. When numbers of books in size-groups are known or estimated:

$$X = \frac{(a + 1.96b + 11.3c) \times 1.11}{147}$$

To estimate number of books when number of 3' sections is known:

For	cubooks,	multiply	by	100
"	8°	"	"	132
"	4°	"	"	67
"	f°	"	"	12
"	8° + 4° only	"	"	117

RATIO OF NUMBER OF BOOKS IN SIZE-GROUPS: These are based on the estimates of Gerould, modified by counts in the New York Public Library, and the Library of Yale University. It is estimated that the collections in a large reference library will be divided into 85 per cent octavos, 13 per cent quartos and 2 per cent folios. If a library contains octavos and quartos only, the probable division will approximate 87 per cent octavos and 13 per cent quartos.

BOOKS PER SECTION: The figure 147 for a section of octavos is at the rate of 7 books per foot of shelving, 7 shelves to the section. The estimate of 75 quartos and 13 folios is based on counts in the New York Public Library. The extremely low figure for folios arises from the fact that they occupy both sides of a compartment,

<sup>1</sup> LIB. JOUR. 59:865-868 (Nov. 15, 1934).



**Bno-Dart** INDUSTRIES

New York 14, N. J. • Los Angeles 25, Calif.  
Toronto 2B, Ontario Made in U. S. A.



